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ABSTRACT

The team teaching concept is examined in this study and three working models for team teaching an education course at Middle Tennessee State University are described. The goal was to develop a model that could be easily adapted to a variety of situations and disciplines, and one that would serve as a demonstration model. The first model consisted of one class period devoted to large group lecture, and two class periods devoted to independent study and seminar discussions. The second model consisted of a split session of large group lecture and intermediate group feedback. Independent study groups and seminar groups were also formed. The third model was a proposed model consisting of a large group lecture discussion session, released time for independent study, and seminars based on topics researched in advance. Faculty reactions to the team teaching method were generally favorable. Anxieties concerning the general effectiveness of instruction in this situation existed until test results showed no significant differences between experimental and control students. It is suggested that the team teaching approach requires more faculty time spent developing materials and instructional routines than traditional teaching methods. Students expressed some dislike for the technique, indicating they felt uncomfortable having to accept more responsibility for their own learning. (SF)

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ED180377

TEAM TEACHING - EXPERIMENTAL PILOT STUDY

DEPARTMENT OF EDUCATION

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TEAM TEACHING--EXPERIMENTAL PILOT STUDY

I. INTRODUCTION AND STATEMENT OF THE PROBLEM

The former Associate Commissioner of Education, Don Davies, in setting forth new directions for educational change, states:

> At all levels of education, from preschool through the university, there is a need to move from a mass approach to teaching and learning to a highly individualized approach. . . . . The time has come to plan a decent funeral for the faltering concept of the self-contained teacher in the self-contained classroom. The instructional team is now essential, as are differentiated, flexible ways to organize and utilize time and talent.[1]

The Middle Tennessee State University education department faculty being aware of these changes in educational thinking and practice have been involved in a team-teaching experimental study. This approach attempts to bridge gaps in our own program offerings, hopefully correcting such deficiencies as noted by Commissioner Davies.

The team teaching concept, while not new, is gaining popularity in the Middle Tennessee area. Junior high schools in Davidson County, Tullahoma, Franklin County, and Montgomery County, as well as many elementary and high schools are involved in the team teaching approach in some or all phases of their instructional programs. Carl H. Peterson calls team teaching "an avant-grade program, and argues that it is here to stay."[2] Others such as Nicholas Polos

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[1]Association for Supervision and Curriculum Development, NEA, "New Directions for Educational Change," News Exchange, Volume 10, Number 6 (October 1968), P. 4.

[2]Carl H. Peterson, "Is Team Teaching for Your Schools?" American School Board Journal, CXLV (October, 1962), 11-13.

say "team teaching is not fact accompli but is instead in the process of becoming. We must recognize however, that we are in a 'twilight' zone of American education here and that perhaps time will present us with a more accurate and sharpened image of team teaching."[3]

Elementary Schools in Murfreesboro are operating non-graded programs as well as individualized instructional programs which lend themselves to the team teaching approach. With this local interest in team teaching, MTSU would be derelict in its duty if it did not recognize the need to provide a training program which would prepare teachers for assignments in these schools, as well as in the traditional schools.

J. Lloyd Trump, through the Commission on the Experimental Study of the Utilization of the Staff in the Secondary School, projected methods of instruction organized around three basic kinds of activities: (1) large-group instruction, often in groups of 100 or more, occupying about 40 percent of the student's time; (2) individual study or small group study with teachers and other staff members as consultants, occupying about 40 percent of the student's time; and (3) discussion in small groups of 12 to 15 students with a teacher, occupying approximately 20 percent of the student's time.[4] This approach subjects the students to a high positive psychological pressure for interaction thus making it costly for a student not to interact. It is through the small group that we can multiply the opportunities for pupil-teacher and pupil-pupil interaction. Large group instruction and small-

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[3]Nichols C. Polos, The Dynamics of Team Teaching. (Dubuque, Iowa: Wm. C. Brown Co., preface) 1965.

[4]J. Lloyd Trump, "Images of the Future," (Washington, D. C.: NASSP, NEA) 1959.

group discussion aim to stimulate and facilitate a variety of independent learning activities by students.

Some of the proposed benefits of team teaching are that it capitalizes on the unique strengths of teachers and widens the influence of good teachers; that it facilitates more efficient use of teachers' time, talents, and skills; that it releases staff time for better preparation and planning; that it breaks down the isolation of the classroom and stimulates cooperation among teachers; that it promotes the in-service development of teachers; and that it results in improvement of teacher morale.[5] However the most important justification for team teaching is not economy of time, talent or money, but the possibilities it offers for improving the quality of instruction.

The purpose of the study was to develop a workable model for team teaching at MTSU, to project future uses of the model, to determine strengths and weaknesses of the model, and to make recommendations to the staff of the Education Department concerning the use of team teaching at the university level.

It is significant that in the November, 1968 issue of the Phi Delta Kappan, under the title of "Innovations That Fail," the following statement appeared:

> Team teaching, while still a good idea, is often "pretty bad" in practice. One of its chief advocates, J. Lloyd Trump, says it too often becomes "turn teaching"---"I'll teach today and it's your turn tomorrow." The three-phase Trump plan (independent study, large groups, and small groups) has also hit a snag. The small group has "almost failen through the sieve."[6]

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[5]D. Richard Wynn, Organization of Public Schools, (Washington, D. C.: The Center for Applied Research in Education, Inc,) 1964, pp. 74-75.

[6]"Innovations That Fail," Phi Delta Kappan, Volume L, Number 3 (November, 1968), p. 181.

The experimental model program that is being utilized by the Education Department attempts to rectify these deficiencies as noted by Trump. When MTSU teachers do get into the team teaching situation, they should be able to avoid the usual pitfalls and be in a better position to become effective teachers in a team situation.

II. THE FIRST MODEL

A. DESCRIPTION

The first experimental model designed by the team consisted of the Education 211 course being divided into eight units:

Unit 1. Overview of General Psychology by Fernald & Fernald, A Programmed Instruction Unit

Unit 2. Introduction to psychology as a science

Unit 3. Observing and interpreting behavior

Unit 4. Development

Unit 5. Learning

Unit 6. Motivation, Perception, Retention

Unit 7. Cognition

Unit 8. Affective learning

Unit 1 was treated as an independent program. Students were required to complete the unit within a week and a half. They were released from two class periods during this phase of the program. The remainder of the program was divided into seven units. Each of the remaining units provided for large group instruction followed by a small group discussion and an independent study session. Each unit consumed three blocks of time. (See illustration I).

The experimental group subjects were 107 students enrolled in Education 211. A matching number of students in traditional sections of Education 211 acted as a control group for the experiment. A series of pre-tests were given: the Engle Psychology Test and a semantic differential measuring student's attitudes toward the teaching profession, toward educational courses, toward team teaching as a

THE FIRST MODEL

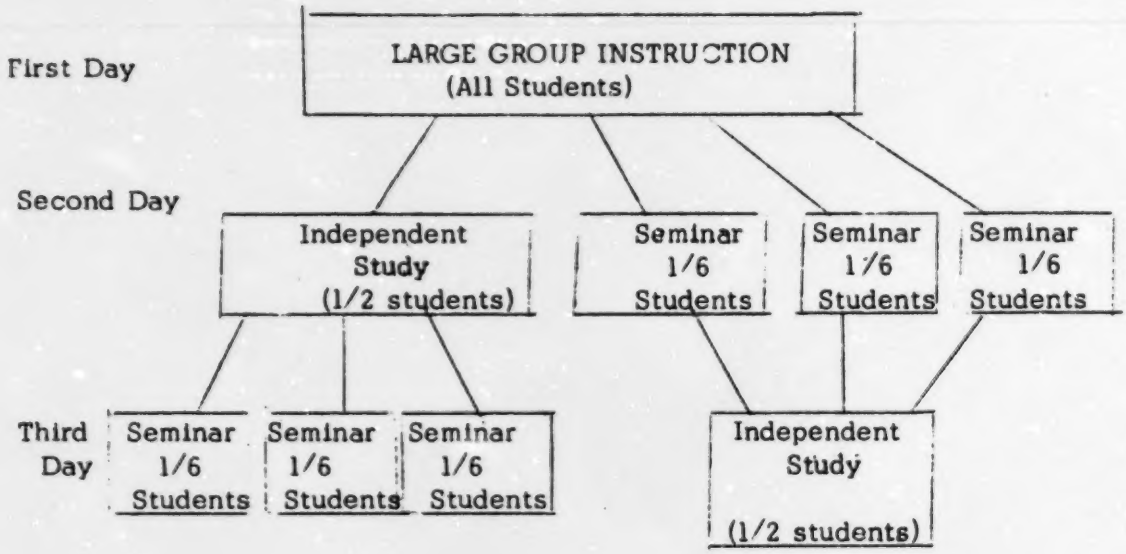

ILLUSTRATION I

student, toward team teaching as a prospective teacher, and toward traditional instruction. Similar tests were given as post-tests and the results used as a basis for comparison. (experimental v. control).

The team met after each class for an informal evaluation of the day's presentations and for planning successive units. Materials for independent study were prepared by team members as needed.

Students were evaluated on a cumulative point system. Three hundred points were divided among tests, independent study materials, participation, and attendance. (see Appendix A i). The point system was based upon a professorial curve suggested by Nunnally.[7]

Class sessions consisted of large group instruction, small group seminars and independent study. The large group instruction consisted of lectures, films, and some demonstrations. No feedback by students was provided for in the large group sessions.

On the class period following the LG instruction, the students were divided into two equal groups (see illustration I). One group consisting of approximately one-half the number of students met with one team member for the purpose of completing independent work packets prepared by the team. An instructional packet was prepared for each unit of instruction and all students completed the same type of materials.

The remaining students were further divided into three small seminar groups,

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[7]Nunnally, Jum C., Educational Measurement and Evaluation, (New York: McGraw-Hill Co.,) 1964, P. 159.

one team member meeting with each group. The purpose of the seminar sessions was to provide feedback for previous sessions. Students were instructed to bring any questions they may have had from the large group sessions, textbook readings, or independent study materials to the seminars and their questions would serve as a basis for group discussion. The team member served as a resource person and not as a discussion leader.

On the third day of the unit, the studens previously in independent study sessions went into seminar sessions, and students previously in seminars went into an independent study session. On the fourth day, the cycle was started again. (see calendar in appendix Aii).

B. EVALUATION

The team was interested in the effectiveness of each model in terms of its functional aspects, knowledge gained, comparisons with traditional instructions, and attitudinal influences. The team was also interested in general student reaction to the team teaching model.

In order to facilitate the evaluation, each team member taught an additional section of the course Education 211 in the traditional method as a control class. A pre-test program was administered to the team class, now designated as experimental, and to the control classes.

The pre-test program consisted of form E of the Engle Psychology Test to measure cognitive knowledge and a semantic scale based on the model developed by Osgood, Tamenbaum, and Suci for the purpose of measuring attitudes toward the teaching profession, education courses, team teaching

as a student, team teaching as a prospective teacher, and toward traditional instruction.[8]

The purposes of the pre-tests were to equate the experimental and control groups and to determine the attitudinal position of the students at the beginning of the experiment.

At the end of the semester, a series of post-tests were given: Form F of The Engle Psychology Test and the semantic differential with the same concepts as used in the pre-test. Post-tests were given for the purposes of measuring cognitive gains within both the control classes and the experimental class, to sample attitudinal changes within the control and experimental classes, to compare the performance of the experimental and control classes, and to sample the effectiveness of the experimental approach as an instrument of attitudinal change. Comparisons between the experimental and control classes were also on team prepared mid-term and final exams.

The Null Hypothesis, i.e., no significant differences, was tested using the students t-test for significance of difference between means.[9] The table of t's, for each test, indicates significances at the .01 and .05 levels of confidence (see Table I).

1. Cognitive Evaluations

On the pre-test, no significant differences were noted between the experimental and control groups. This satisfies a condition of the experimental

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[8]Osgood, Charles E., et. el., The Measurement of Meaning, (Urbana, Ill., University of Illinois Press,) 1957.

[9]Cornell, Francis G., The Essentials of Educational Statistics, (New York: John Wiley & Sons, Inc.), 1956, pp. 133, 225.

TABLE I

TABLE OF t's COGNITIVE TESTS
ADMINISTERED TO 88 EXPERIMENTAL AND
85 CONTROL STUDENTS OF EDUCATION 211
MIDDLE TENNESSEE STATE UNIVERSITY

Engle Psychology Test, Form E and F		
Pre-Test	Exp. V Cont.	t = 0.71
Post-Test	Exp. v Cont.	t = 0.67
Experimental	Pre. v Post	t = 2.24*
Control	Pre. v Post	t = 2.89**
Mid-Term	Exp. v Cont.	t = 0.99
Final	Exp. v Cont.	t. = 0.06

* Significant at .05 Level of Confidence
** Significant at .01 Level of Confidence

design, that the experimental and control groups are equated cognitively at the beginning of the study.

Significant differences were found between the pre-test and post-test at the .05 level of confidence for the control group on the Engle Psychology Test. The directions of significance was toward the post-test. Gains in cognitive learning were significant for both the experimental as well as the control groups.

There were no significant difference noted on post-tests between the experimental and the control groups. The amount of cognitive learning was approximately the same for both the experimental (team-teaching) and the control (traditional) groups. The finding was further supported by the lack of significant differences between common mid-term and final exams administered to both the experimental and control groups (see Table I).

2. Affective

The semantic differential served as the basis for evaluation of affective learning. On the pre-test, highly significant differences were found between the experimental and the control groups, the directions of difference favoring the experimental group. Significant differences were found at the .01 level of confidence for the evaluative dimension of concept I, (Teaching as a Profession for me); for the evaluative and potency dimension of Concept II, (Team Teaching for me as a Teacher); for the evaluative and potency dimensions of Concept III, (Team Teaching for me as a Learner); for the activity dimension of Concept IV, (Traditional College Type Instruction); and for the evaluative dimension of Concept V, (Education courses), (see Table II).

The high positive attitudes expressed by the experimental group suggested that the "Hawthorne Effect" was present in the pre-test semantic differential. The experimental and control groups could not be equated in terms of affective position on the basis of the semantic pre-test.

No significant differences were found on the post-test between the experimental and control groups (see Table III).

In comparing the control pre-test and post-test, two significant differences were noted: Concept III, (Team Teaching for me as a Learner), was significant on the activity dimension at the .05 level of confidence; and Concept V, (Education Courses), was significant on the evaluative dimension at the .05 level of confidence. (see Table IV). Control students saw team-teaching as more active at the beginning of the term than they did at the end of the term. The attitude of the control students was more highly positive toward education courses at the end of the term than at the beginning of the term. The control students were exposed to team-teaching models during the course but were not taught using team-teaching methods.

Significant changes were noted on two concepts of the experimental group pre-test v. post-test. Concept II, (Team Teaching for me as a Teacher), was significant at the .05 level of confidence for both the evaluative and the potency dimensions. Students in the experimental group had a higher positive attitude and saw team teaching as more potent from a teacher's view point at the beginning of the semester than at the end of the semester. Concept III, (Team Teaching for me as a Learner), was significant at the .01 level of confidence for the evaluative dimension, and at the .05 level of confidence for the potency dimension. Students were more positively inclined toward team teaching for students at the beginning

TABLE II

TABLE OF t's, SEMANTIC DIFFERENTIAL PRE-TEST
ADMINISTERED TO 85 EXPERIMENTAL AND
76 CONTROL STUDENTS OF EDUCATION 211
MIDDLE TENNESSEE STATE UNIVERSITY

	Pre-Test		
Concept	Experimental v Control		
	Evaluative	Potency	Activity
I	3.36*	0.36	-0.50
II	4.38*	4.45*	-0.45
III	6.53*	3.41*	-0.44
IV	-1.45	0.45	-3.13*
V	4.18*	0.75	0.43

* Significant at the .01 Level of Confidence

TABLE III

TABLE OF t's, SEMANTIC DIFFERENTIAL POST-TEST
ADMINISTERED TO 85 EXPERIMENTAL AND
76 CONTROL STUDENTS OF EDUCATION 211
MIDDLE TENNESSEE STATE UNIVERSITY

Concept	Post-Test Experimental v Control		
	Evaluative	Potency	Activity
I	0.78	0.28	0.25
II	1.33	0.35	0.44
III	0.46	0.89	1.56
IV	1.24	1.65	0.08
V	0.63	0.29	0.21

TABLE IV

TABLE OF t's SEMANTIC DIFFERENTIAL
PRE-TEST v POST-TEST ADMINISTERED
TO 76 CONTROL STUDENTS OF EDUCATION 211
MIDDLE TENNESSEE STATE UNIVERSITY

	Control		
Concept	Pre-Test v Post-Test		
	Evaluative	Potency	Activity
I	-0.21	0.64	0.92
II	0.00	0.71	0.62
III	-0.25	0.21	2.25*
IV	1.64	0.85	-1.60
V	-2.46*	-1.08	1.90

* Significant at the .05 Level of Confidence

TABLE V

TABLE OF t's, SEMANTIC DIFFERENTIAL
PRE-TEST v POST-TEST ADMINISTERED TO
85 EXPERIMENTAL STUDENTS OF EDUCATION 211
MIDDLE TENNESSEE STATE UNIVERSITY

Concept	Experimental Pre-Test v Post-Test Evaluative	Potency	Activity
I	1.67	0.66	0.17
II	2.53*	2.46*	-0.33
III	3.00**	2.15*	-0.18
IV	-1.27	-1.83	-1.77
V	0.15	-0.75	-1.60

* Significant at the .05 Level of Confidence

** Significant at the .01 Level of Confidence

of the semester, the "Hawthorne effect" suspected, made the possibility of desirable change quite difficult to measure.

II. THE SECOND MODEL

A. DESCRIPTION (MODIFICATIONS TO THE FIRST MODEL)

The implementation of the first model revealed several problem areas which needed attention. The team recognized the problems and made several modifications to the first model in an attempt to alleviate those problem areas.

The students in the first model felt a need for an individual faculty member with whom they could identify. The team of four teachers provided a different situation for guidance than the one-class-one-teacher situation to which they were most familiar.

The instructors did not know all of the students as well as they would have liked. Most of the students were known by the instructor but in many cases it was only by name.

The nature of the scheduling placed the class meeting on Tuesday and Thursday each week. There was an apparent time lag between days, especially from Thursday until the following Tuesday. This time lag proved to be too great for carry over of stimulus information acquired in the large group instruction session to the small seminar discussion sessions which met the second day. One-half of the students who met in independent study the second day were two class sessions (one week) removed from the large group instruction session before a small group seminar session (see illustration I).

The seminars were not structured enough to provide sufficient guidance for group discussions and follow-up of the large group instruction sessions. The students were not prepared for the seminars and they evolved into instructor-directed rather than student-directed sessions as projected in the model.

One team member was assigned to independent study. The task of this team member was to serve as a resource person for the one-half of the students participating in independent study. Study materials proved to be usable by students independent of teacher guidance.

The second model (see illustration II) was an execution of the first model with the following changes as a result of the problem areas described above.

1. Students were divided into four intermediate discussion groups. These groups remained constant throughout the semester. This organizational model change was made in an effort to implement the following objectives:
   a) To associate one team member with one-fourth of the students for identification purposes. Each instructor kept the roll of his assigned students. Students were encouraged to discuss problems with the instructor to whom they were assigned. In addition, this organizational structure was to enable the instructors to get to know individual members of their assigned group better.
   b) To provide immediate feedback, questions, problem solving, and discussion from the large group sessions. The first day was divided into two sessions. The first part of the period (approximately thirty minutes) was devoted to large group instruction. The students would divide into their intermediate discussion groups for the second part of the period.

THE SECOND MODEL

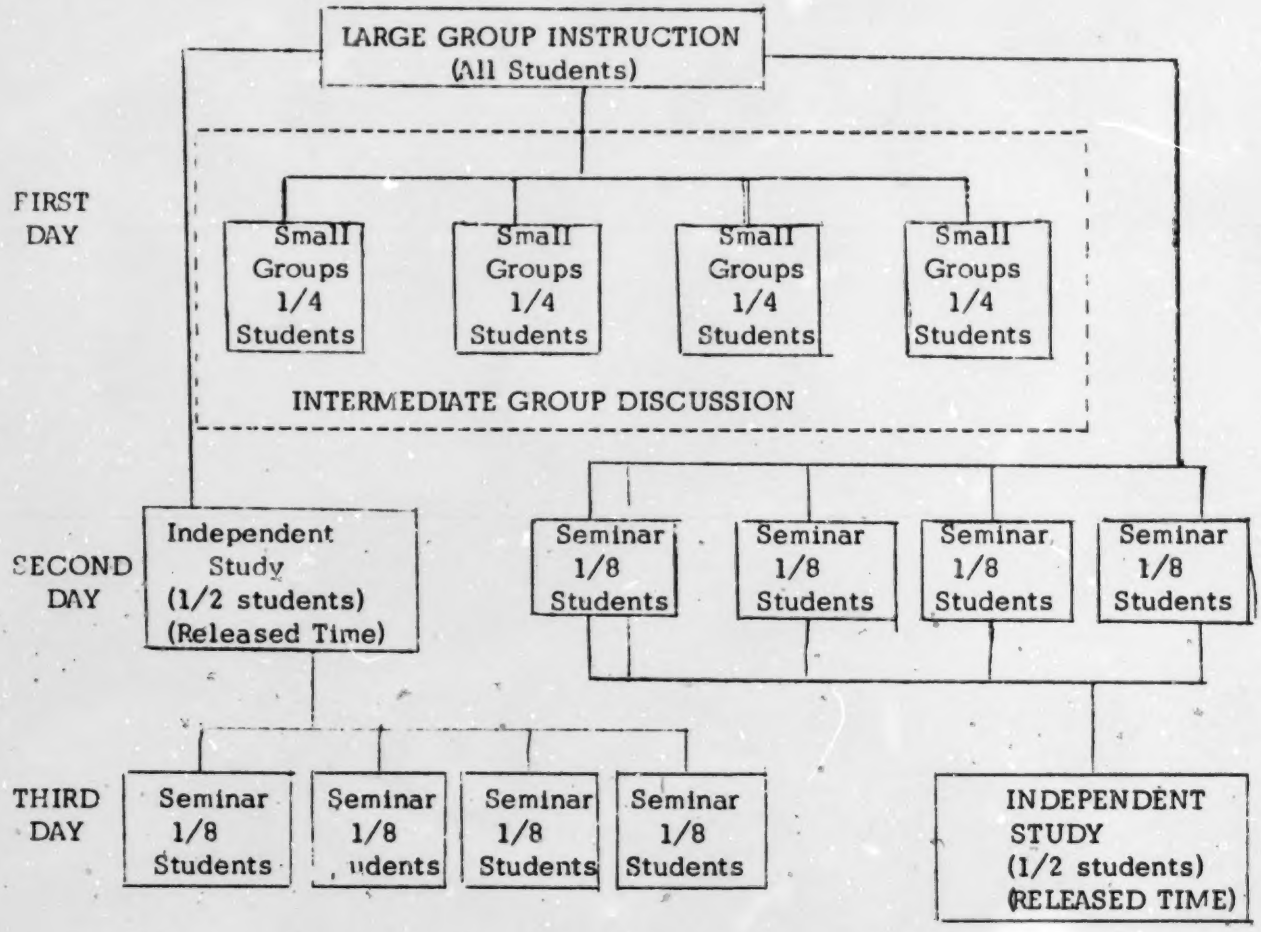


ILLUSTRATION II

2. The seminars were structured by the team. This structuring consisted of problems and discussion topic guides related to the large group instruction session and other related areas being given to the students before the seminars were to meet. This structuring was an effort to implement the following objectives:
   a) To facilitate student-centered discussion rather than instructor-centered discussion seminars.
   b) To give more direction to the discussion, thus reinforcing the large group session and eliciting better quality participation and response from the participants.
3. The students were given released time when they were scheduled for independent study. This organizational change was made in an effort to implement the following objectives:
   a) To better utilize the team member previously assigned to independent study by reassigning as a resource teacher in seminars.
   b) To increase the number and thereby reduce the size of the seminar in order to facilitate more effective discussion.
   c) To give the students released class time, free of supervision, to work on independent study materials; thus providing an opportunity for development of student responsibility.

B. EVALUATION

The evaluation procedure for the second model was similar to those outlined in model one. The concepts were modified and some were added to the semantic differential. The concepts for the second model were:

1) Team Teaching; 2) Teaching As a Profession; 3) Traditional College Type Instruction; 4) Researching a Topic; 5) Studying; 6) Reading; 7) Participating in Discussion; and 8) Listening to a Lecture.

Scores earned by the students on teacher constructed mid-term and final examinations were not utilized for comparison purposes in the second model.

The procedure on the Engle Psychology Test, Forms E and F remained the same as model one.

Additional information was gathered through a questionnaire administered to the students in the second model. (see appendix B, viii).

1. Cognitive Evaluation

On the pre-test, no significant difference was found to exist as a result of scores on the Engle Psychology Test. This satisfied an experimental design criterion that the groups are cognitively equated at the beginning of the study.

Significant differences at the .05 level of confidence were found in the experimental group between the pre-test and post-test scores on the Engle's test. The direction of the gain was toward the post-test.

No significant difference was found in the control group between the pre-test and post-test scores on the Engle's test. Gains in cognitive learning were significant within the experimental group but were not significant within the control groups.

No significant difference was found to exist on the post-test between the experimental and control groups as a result of scores on the Engle's test (see Table VI).

TABLE VI

TABLE OF t's, COGNITIVE TESTS
ADMINISTERED TO 68 EXPERIMENTAL AND
103 CONTROL STUDENTS OF EDUCATION 211
MIDDLE TENNESSEE STATE UNIVERSITY

Engles Psychology Test, Forms E and F		
Pre-Test	Control v Exp.	0.14
Post-Test	Control v Exp.	0.35
Control	Pre. v Post	-1.66
Experimental	Pre. v Post	-2.00*

* Significant at .05

2. Affective Evaluation

a) Semantic Differential

The semantic differential was the basis for evaluation of affective learning. On the pre-test, no significant differences were found between the experimental and control groups (see Table VII). This met an experimental design criterion.

No significant differences were found on the post-test between the experimental and control groups. (see Table VIII).

In comparing the experimental group pre-test and post-test, (see Table IX, highly significant differences were found in Concept I (Team Teaching), Concept VII (Participating In-Discussion), and Concept VIII (Listening To A Lecture).

Concept I, (Team Teaching), was significant at the .01 level of confidence for both the evaluative and potency dimensions. The attitudes were more positive and more potent at the beginning of the semester than at the conclusion.

Concept VII, (Participating In Discussion), was found to be significant at the .05 level of confidence for the potency dimension and at the .01 level of confidence at both the evaluative and activity dimension. The attitudes were more positive, stronger, and more active at the beginning of the semester than at the end.

Concept VIII, (Listening To A Lecture), was found to be significant at the .01 level of confidence for the evaluative dimension. The attitudes became more positive at the conclusion of the semester than at the beginning of the semester.

In comparing the control group pre-test and post-test, (see Table X),

TABLE VII

TABLE OF t's, SEMANTIC DIFFERENTIAL PRE-TEST ADMINISTERED TO 68 EXPERIMENTAL AND 103 CONTROL STUDENTS OF EDUCATION 211 MIDDLE TENNESSEE STATE UNIVERSITY

Concepts	Pre-Test Experimental v Control		
	Evaluative	Potency	Activity
I	0.83	-0.38	-1.21
II	-0.73	-0.88	-1.17
III	-1.89	-1.70	-1.11
IV	-1.19	-1.00	-0.40
V	-0.81	-1.13	1.06
VI	0.14	1.13	0.94
VII	-0.23	-0.32	1.73
VIII	-0.12	-0.94	1.44

TABLE VIII

TABLE OF t's, SEMANTIC DIFFERENTIAL POST-TEST
ADMINISTERED TO 68 EXPERIMENTAL AND
103 CONTROL STUDENTS OF EDUCATION 211
MIDDLE TENNESSEE STATE UNIVERSITY

Concepts	Post-Test Experimental v Control		
	Evaluative	Potency	Activity
I	-1.33	-1.89	-0.33
II	-0.47	-1.25	-0.06
III	-0.73	-1.06	-0.53
IV	-1.63	0.47	-0.67
V	-0.09	0.12	0.35
VI	-0.62	0.28	-0.69
VII	-1.04	-1.06	-0.19
VIII	-1.30	-1.15	0.41

TABLE IX

TABLE OF t's, SEMANTIC DIFFERENTIAL PRE-TEST V POST-TEST
ADMINISTERED TO 68 EXPERIMENTAL STUDENTS OF
EDUCATION 211
MIDDLE TENNESSEE STATE UNIVERSITY

Concepts	Experimental Group Pre-Test v Post-Test		
	Evaluative	Potency	Acitivity
I	3.25**	3.13**	1.27
II	-0.84	-0.38	1.27
III	-0.55	1.00	0.93
IV	-0.70	1.18	1.73
V	-1.31	-0.19	1.92
VI	1.00	-0.75	0.60
VII	4.29**	2.29*	3.80**
VIII	-3.68	-0.47	-1.50

* Significant at .05 Level of Confidence
** Significant at .01 Level of Confidence

TABLE X

TABLE OF t's, SEMANTIC DIFFERENTIAL PRE-TEST ADMINISTERED TO 103 CONTROL STUDENTS OF EDUCATION 211, MIDDLE TENNESSEE STATE UNIVERSITY

Concepts	Control Group Pre-Test v. Post-Test		
	Evaluative	Potency	Activity
I	2.21*	1.57	2.82**
II	0.80	0.92	-0.21
III	0.75	2.25*	1.15
IV	-1.26	0.50	1.54
V	-0.63	1.42	0.85
VI	0.24	0.92	-1.31
VII	3.89**	1.80	2.33*
VIII	5.47**	-1.23	3.33**

* Significant at .05 Level of Confidence
** Significant at .01 Level of Confidence

significant differences were found on Concept I (Team Teaching, Concept III (Traditional College Type Instruction), Concept VII (Participating In Discussion), and Concept VIII (Listening To A Lecture).

Concept I, (Team Teaching), was significant at the .05 level of confidence on the evaluative dimension and at the .01 level of confidence on the activity dimension. This significance is toward the pre-test. The attitudes of the control group toward team teaching were more positive at the beginning of the project than at the end. The attitude was considerably more active.

Concept III, (Traditional College Type Instruction), was significant at the .05 level of confidence for the potency dimension. The feelings of students toward Concept III were stronger on the pre-test than on the post-test.

Concept VII, (Participating in a Discussion), was significant at the .05 level of confidence for the activity dimension and significant at the .01 level for the evaluative dimension. The attitudes of the control groups were highly positive and more active at the beginning of the project on Concept VII.

Concept VIII (Listening to a Lecture) was found to be highly significant at the .01 level of confidence for both the evaluative and activity dimension. Student attitudes were much more positive toward listening to a lecture in the beginning of project than at the conclusion.

b) Team Teaching Questionnaire

On the Team Teaching Questionnaire administered to the experimental group at the end of the second model implementation period, some attitudes, feelings, and/or opinions were compiled. (see appendix B Viii).

Sixty-five per cent of the students felt that the Team Teaching Model had not helped them to improve as a student. The remainder of the experimental

group felt that it had. The students did feel that they benefited from having different teachers in the same subject.

The teachers projected their enthusiasm for the Team Teaching Model. This was evidenced by the perception of 89 per cent of the students that the teachers liked the model.

The students did not utilize the library more under this system as opposed to their other classes. They felt that they could take advantage of independent study time (85 per cent) but they felt that the time had not been used wisely (74 per cent). Most of the students feel they can do independent study work (84 per cent).

In considering the helpfulness of the organization patterns within the model, the students responded to the four types of grouping on a five-point scale with a rating of five being high and one being low (see Table XI). Ratings of three on all patterns occurred most frequently, four was second; and two was third. On independent study, however, the lowest (1) rating received the second largest percentage of responses.

The organizational patterns within the second model seemed to fulfill their objectives (see Table XII). Large group instruction sessions provided fundamental ideas and basic concepts as reported by 83 per cent of the group. Small groups,discussion groups and seminars provided for discussion. Independent study provided for enrichment type experiences along with some basic concepts. The students reported that independent study packets required a considerable amount of work outside of class time.

How much time is needed for large group instruction? The group reported that at least 30 minutes and not more than 60 minutes, (see Table XIII), was most desirable.

TABLE XI

HOW ORGANIZATIONAL STRUCTURE WAS OF HELP TO STUDENTS FROM FREQUENCY OF RESPONSES, TEAM TEACHING QUESTIONNAIRE, SECOND MODEL, ADMINISTERED TO EXPERIMENTAL GROUPS, EDUCATION 211 MIDDLE TENNESSEE STATE UNIVERSITY

Organizational Structure	Amount of Help				
	High (5)	Good (4)	Medium (3)	Poor (2)	Little (1)
Large Group Instruction	1	19	29	11	5
Small Group Discussion	7	22	23	12	2
Seminars	9	15	17	13	9
Independent Study	3	10	28	6	11

TABLE XII

TYPES OF LEARNING FACILITATED IN ORGANIZATIONAL STRUCTURE FROM FREQUENCY OF RESPONSES, TEAM TEACHING QUESTIONNAIRE, SECOND MODEL, ADMINISTERED TO EXPERIMENTAL GROUP, EDUCATION 211 MIDDLE TENNESSEE STATE UNIVERSITY

Organizational Structure	Types of Learning*			
	A	B	C	D
Large Group Instruction	10	29	2	30
Small Group Discussion	13	10	33	9
Seminars	9	5	48	3
Independent Study	30	13	1	18

* Types of Learning
A - Enrichment Experiences
B - Fundamental Ideas
C - Discussion
D - Basic Concepts

TABLE XIII

AMOUNT OF TIME NEEDED FOR LARGE GROUP INSTRUCTION FROM TEAM TEACHING QUESTIONNAIRE, SECOND MODEL, ADMINISTERED TO EXPERIMENTAL GROUP, EDUCATION 211 MIDDLE TENNESSEE STATE UNIVERSITY

Time Limits	Time in Minutes				
	15	20	30	45	60
Minimum	9	10	27	18	0
Maximum	3	1	13	23	25

Many students reported that they liked team teaching as well or better than a regular school program. They felt that it had helped them develop a sense of responsibility. They also felt that the team teaching model helped them to grow more professionally as compared to a traditional program. When given a choice of electing to enroll in a team teaching versus a traditionally taught class, they would select the latter. Might it be easier to listen to a lecture, take notes and study for a test?

IV. THE THIRD MODEL: A Proposal

The second team-teaching model seemed to more nearly satisfy the conditions for a working model than the first semester project. However, certain weaknesses appeared in the second model and some problems of the first model were not adequately corrected in the second model.

Some distraction occurred in the second model on the days students met in large group instruction. Students listened to a lecture for approximately thirty minutes and then moved from the lecture hall to smaller classrooms for discussion in intermediate sized groups. This movement seemed to destroy some of the motivation of the large group lecture. This caused the intermediate group sessions to be only an instructor-centered continuation of the lecture.

Another problem encountered in the second model was a lack of feedback in the large group sessions. Students were instructed to hold questions from the large group sessions for one of the other sessions. Spontaneous feedback was therefore absent in both the previous models.

Although an attempt to improve the seminar was made in the second model, general effectiveness remained unsatisfactory. Students had the topics of discussion prior to the seminar session, but the lack of student-centered discussion of the topics forced another instructor-centered session.

In general, both models were over structured. An adjusted model which might avoid some of the problems of the first and second model needed to be projected.

The Third Model:

Large group sessions should allow a free exchange of ideas. Students should be encouraged to ask questions as they came to mind. Spontaneous feedback is a good way of letting a lecturer know how well he is getting his ideas across to the group. Time at the end of each large group session should be allowed for discussion. Intermediate groups would be used sparingly and for identification and orientation purposes only.

Independent study sessions were used for the completion of prepared instructional materials. These were found to be valuable teaching aids. However, the released time of students might better be utilized in other additional learning activities, especially research activities related to the course. The prepared instructional materials might be used as supplementary to other activities and required of students outside of class.

The effectiveness of the seminar could be improved if students were required to prepare background material on the topics announced for discussion prior to the seminar sessions. Such preparation could be in the form of formal papers prepared during independent study time. The effectiviness of the seminars could be further improved if the seminars, without instructor direction, were required to synthesize a report to the class on the topic of their discussion. Some large group sessions would be devoted to student seminar presentations.

More attention needs to be given to orientation of students at the beginning of the course. The student's role in each of the component parts of the team-teaching model, i.e., large group instruction, independent study, and seminars, should be clearly understood. Administrative detail should be

kept to a minimum.

Many features of the earlier models should be retained. Calendars, flow charts, and grading scales are of much use to both students and team members in keeping instructional routines clear and well paced.

The proposed model could be adapted to many different disciplines. The team-teaching model would serve as a demonstration model for not only prospective teachers, but for University staff members who were interested in an effective instructional model for large groups of students.

V. SUMMARY AND CONCLUSION

A. Summary

A team of four staff members of the Education Department at Middle Tennessee State University attempted to develop a workable model for team teaching which could be easily adapted to a variety of situations and disciplines, and which would serve as a demonstration model for prospective teachers and other staff members who might be interested in the method. A series of pre-tests and post-tests were administered to experimental and control groups designed to measure changes in both cognitive and affective learnings.

In general, no significant differences were found between groups on either the cognitive or affective tests. Cognitive gains were noted within both the control and experimental groups on the first model, and within the experimental group on the second model.

The first model for team teaching consisted of a session of one class period devoted to a large group lecture, and two class periods devoted to independent study and seminar discussions. One half of the students were assigned to independent study and the other half to seminars each day. All feedback was to be confined to the seminar sessions. One instructor was assigned to each seminar and independent study group.

The second model consisted of a split session of large group lecture and intermediate group feedback. The independent study groups were released from class and the instructor assigned to a seminar group which resulted in smaller seminar groups. Seminars were structured in that students received advance notice of selected discussion topics.

The third model was a proposed model consisting of a large group lecture discussion session; released time for independent study which might center around prepared materials, research appropriate to the discipline, and preparation for the seminars; and seminars based on topics researched in advance of the sessions, with the purpose of synthesizing a report to be made to the total group in the next large group session. A form of this model was successfully used in several courses during the summer semester, 1969.

Attitudes of students on the various concepts measured during the experiment were high and positive as noted in the illustrations III and IV. Significant differences between the experimental and control groups in the first semester semantic differential was attributed to the "Hawthorne effect". Students in the experimental group perceived of themselves as being a part of an experimental project which interested and excited them. This resulted in higher scores on the semantic differential than would normally be attained. Attempts to control this effect in the second semester were successful and no significant differences in attitudes were noted between the experimental and control groups on the pre-test for the second model.

An interesting phenomenon occurred in the second semester experiment. Significant attitudinal changes were noted within both the experimental and the control groups. The direction of changes for two of the concepts affected were similar in both groups. One explanation for the phenomenon is that the attitudes, interests, and motivational sets of the team members became more consistent, harmonious, and similar as the team worked together. The direction of changes for two concepts,

"Team Teaching" and "Participating in a discussion," was not in the direction expected by the team. Both the experimental and the control groups were more highly positive in their feelings toward the concepts at the beginning than at the end of the semester. An explanation of the change might be that the students have a more realistic perception of the concepts as a result of direct experiences for the experimental group and vicarious experiences for the control groups, and the realistic situation may be more threatening than the imagined one.

One concept, "Listening to a lecture", changed to a more positive position for the experimental group and to a less positive position for the control group. The variety offered by team members and guests may in part account for the change. Boredom may account for the change in the control group.

A lack of significant gains in cognitive learning was noted in the control group of the second semester. A possible explanation of this lack of change may be due to a drop in motivational drive which students generally experience during the second semester of the school year. If such an explanation is plausible the team-teaching model does possess a motivational factor which the traditional method lacks. However, this factor may be attributed to the newness and differentness of the model.

B. CONCLUSIONS

Team member reactions to the team-teaching method was generally good and favorable. The team members had to reach a point of sensitivity to one another before effective communications could be established.

Anxieties concerning the general effectiveness of instruction in an experimental situation existed until test results showing no significant differences between experimental and control students reassured team members. As an operating maximum, all teachers will not be comfortable in team teaching just as all teachers are not comfortable in traditional instruction.

Team teaching in its initial stage of development is not economical in terms of time or money. Team members spent numerous hours in developing materials and instructional routines. One important characteristic of team teaching is that of forced planning. Clearly formulated goals, instructional strategies, and evaluative techniques must be developed prior to the instructional sessions.

One strong feature of team teaching is that of staff utilization. Each team member found areas in the instructional program which he felt competent to handle. By drawing upon the resources and competencies of individual members, each team member grew professionally. Each member was reinforced in their individual teaching assignment as a result of the contacts with other team members.

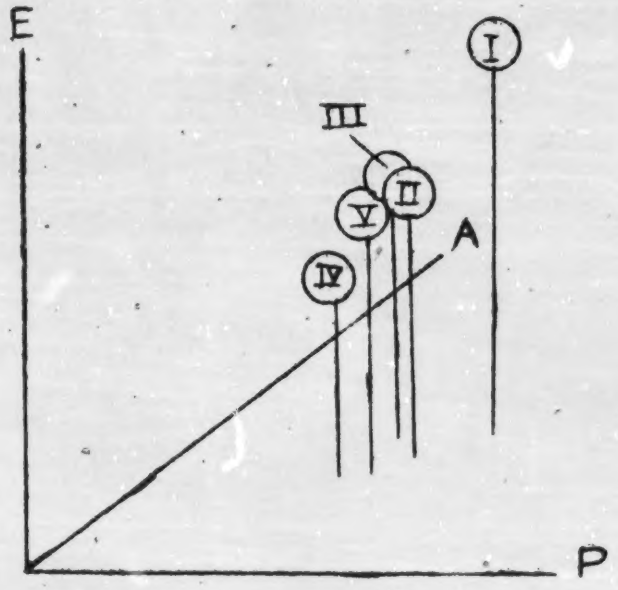
The team members through various means attempted to assess student reaction to team teaching. In general, students did not like team teaching. Students felt uncomfortable in accepting responsibility for their own learning. Pressure for involvement in the interactive-learning process increased. Although students admitted a higher sense of professionalization, there was an increase in the discomfort of the student in the team teaching process. Students felt more comfortable in the familar traditional setting

in which they could rely upon the instructor for the necessary information required for the course.

The team proposes a follow-up study of subjects of both the experimental and controlled groups that were involved in the experiment. This study will be conducted during the subject's final semester at MTSU. This study will attempt to measure subsquent reactions to the team teaching process.

In general, the team accomplished the objective of developing a functional adaptive model for team teaching. The model is proposed as a demonstration for prospective teachers and other interested parties.

SEMANTIC SPACE MODEL
FIRST SEMESTER EXPERIMENTAL PRE-TEST ...



CONCEPTS

I. Teaching as a profession for me
II. Team Teaching for me as a Teacher
III. Team Teaching for me as a Learner
IV. Traditional College Type Instruction
V. Education Courses

ILLUSTRATION III (a)

SEMANTIC SPACE MODEL
FIRST SEMESTER EXPERIMENTAL POST-TEST

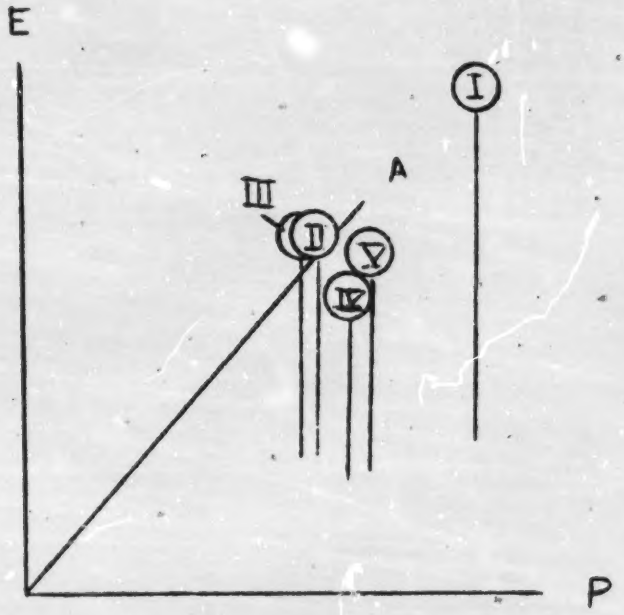


ILLUSTRATION III (b)

SEMANTIC SPACE MODEL
FIRST SEMESTER CONTROL PRE-TEST

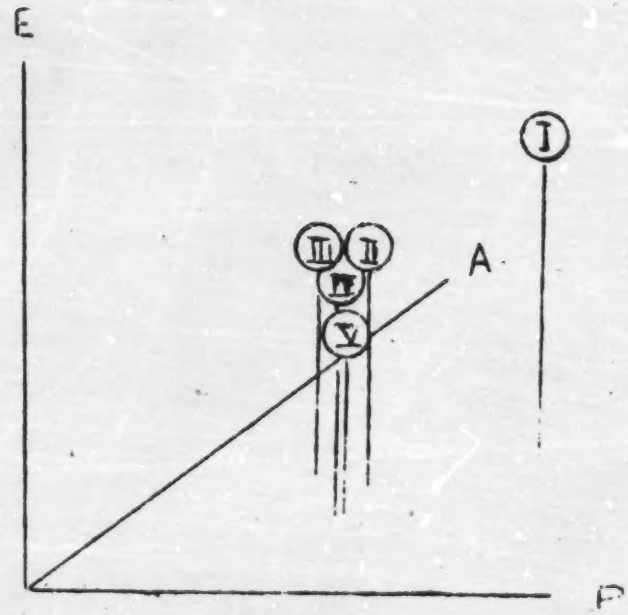


ILLUSTRATION III (c)

SEMANTIC SPACE MODEL
FIRST SEMESTER CONTROL POST-TEST

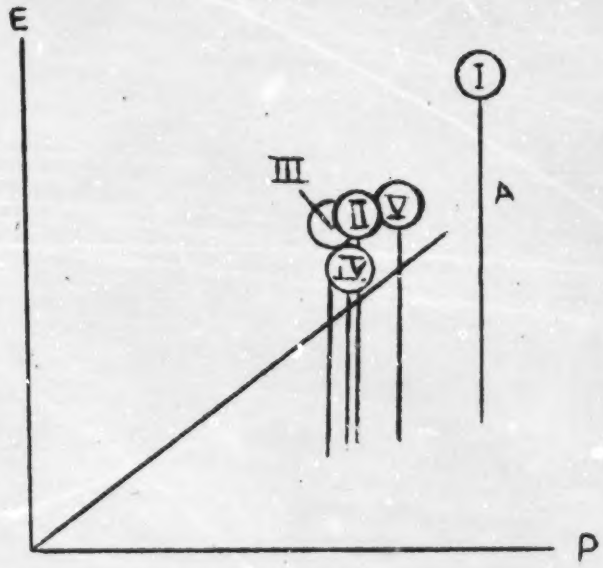
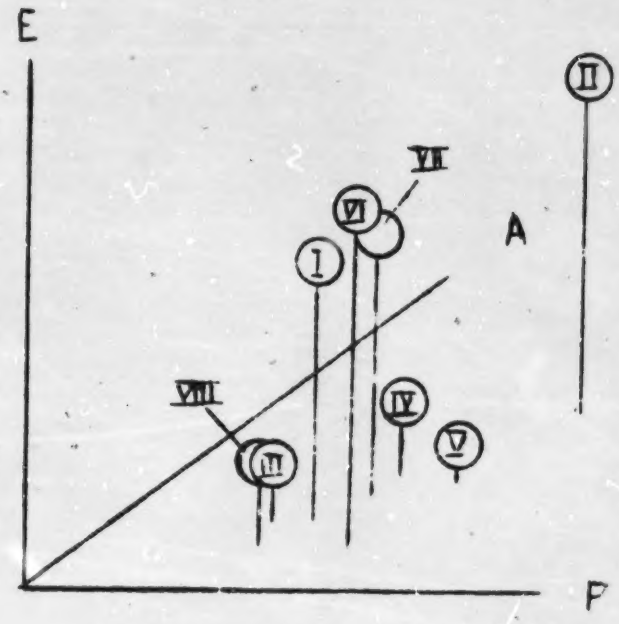


ILLUSTRATION III (d)

SEMANTIC SPACE MODEL
SECOND SEMESTER EXPERIMENTAL PRE-TEST



CONCEPTS

I. Team Teaching
II. Teaching as a Profession
III. Traditional College Type Instruction
IV. Researching a Topic
V. Studying
VI. Reading
VII. Participating in a Discussion
VIII. Listening to a Lecture

ILLUSTRATION IV (a)

SEMANTIC SPACE MODEL
SECOND SEMESTER EXPERIMENTAL POST-TEST

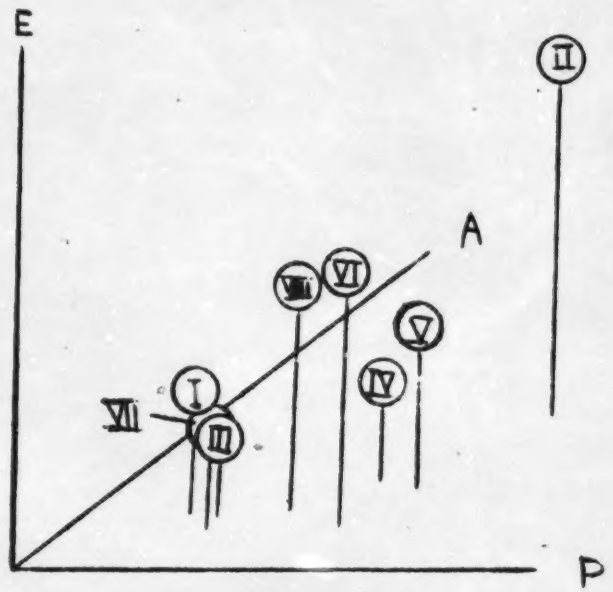


ILLUSTRATION IV (b)

SEMANTIC SPACE MODEL
SECOND SEMESTER CONTROL PRE-TEST

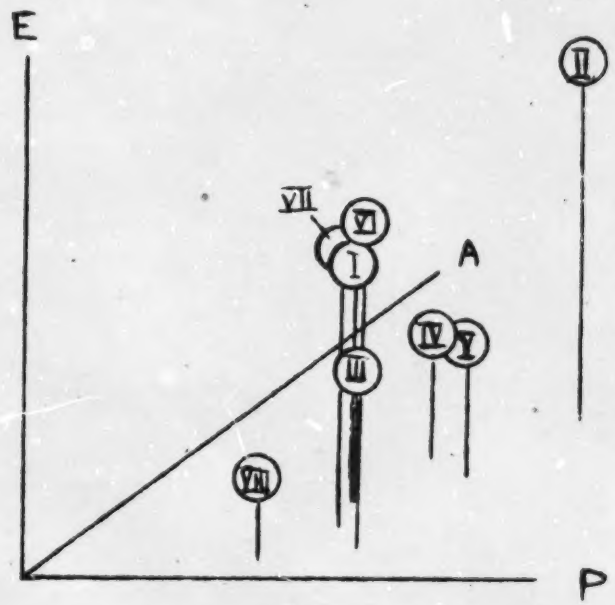


ILLUSTRATION IV (c)

SEMANTIC SPACE MODEL
SECOND SEMESTER CONTROL POST-TEST

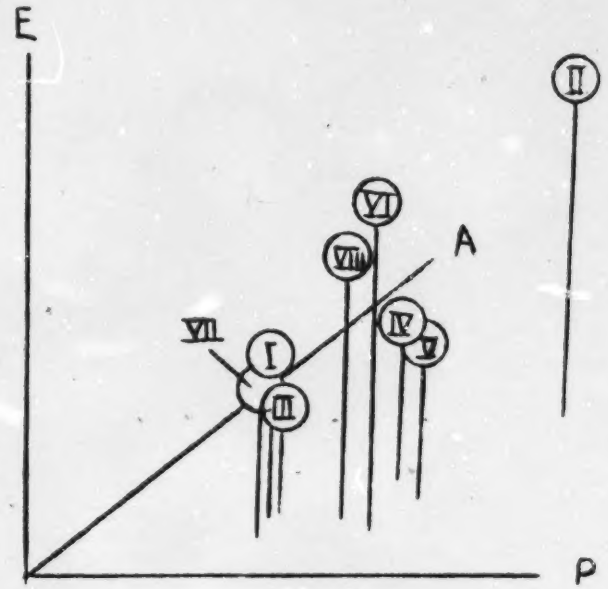


ILLUSTRATION IV (d)

APPENDIX A

THE FIRST MODEL

EVALUATION

Tests: Mid-term, Final, Test over Program

Point System:

Mid-term	- 100	
Final	- 100	
Program (Fernald)	- 25	
Individual Inst.	- 50	
Attendance	- 10	(Subtract 5 for each absence)
Participation	- 15	
TOTAL	300	

Grade Scale:

A - 260
B - 225
C - 175
D - 135
F -

CALENDAR FOR THE FIRST MODEL

DATE		ACTIVITY
Oct.	1	Pre-Test
	3	Released Time Fernald Et. El. Programmed Text
	8	Released Time
	10	L. G. - Programmed Text
	15	L. G. - Test over Fernald; Begin Chapter I Loree
	17	L. G. - Conclude Chapter I; Statistics Demonstration
	22	Sem. I. S.
	24	I. S. Sem.
	29	L. G. - Chapter 2 Loree
	31	Sem. I. S.
Nov.	5	I. S. Sem.
	7	L. G. - Development, Chapters 3, 5 Loree
	12	I. S. Sem.
	14	Sem. I. S.
	19	Mid Term
	21	L. G. - Learning, Chapters 6, 7 Loree
	26	I. S. Sem.
Dec.	3	Sem. I. S.
	5	L. G. - Motivation, Perception, Retention, Chapters (8-9)Loree
	10	I. S. Sem.
	12	Sem. I. S.
	17	L. G. - Cognition - Chapters (10, 11, 12) Loree
	19	L. G. - Affective - Chapters (10, 13) Loree
		Christmas Holidays
Jan.	2	Class size Groups - Review Cognition, Affective
	7	I. S. Sem.
	9	Sem. I. S.
	14	Review for Final
	16	Evaluation - Post Test
	17-23	Final Exam

SAMPLE ROUTING SHEET
USED IN THE FIRST MODEL

EDUCATION 211 - TEAM PROJECT

Students will go to the areas designated for each group for small group instruction and independent study.

October 22

Group	2	4	5	1 3 6
Activity		Seminars		Ind. Study
Room	OM162	OM158	OM159	NCB103
Instructor	Martin	Freedle	Sakas	Moseley

October 24

Group	1	3	6	2 4 5
Activity		Seminars		Ind. Study
Room	OM159	OM162	OM158	NCB103
Instructor	Sakas	Martin	Moseley	Freedle

APPENDIX B
THE SECOND MODEL

TENTATIVE CALENDAR EDUCATION 211, SPRING SEMESTER 1969

Date	Activity		Topic	Unit
Jan. 30	LARGE GROUP (L.G.)		Orientation	
Feb. 4			Pre-test	
6			Orientation	
11			Check on Programmed Unit	
13	Independent Study (I.S.)		Programmed Instruction	
18	L.G.		Test over Programmed Unit	
20	L.G.		Scientific Method	I Science of Psychology Chapter I and Appendix
	Small Group Discussion (SGD)			
25	L.G.		Statistical Concepts	
	S.G.D.			
27	Independent Study	Seminar	Application of above Topics	
Mar. 4	Seminar	Ind. Study		
6	L.G.		Film (reinforcement)	II Behavior Chapter II
11	L.G.		Observing and interpreting Behavior	
	S.G.D.			
13	L.G.		Guest Speaker	
18	Ind. St.	Seminar	Application of above Topics	
20	Sem.	Ind. St.		
25	L.G.		Film (Brain study)	
27	MID-TERM EXAM			
April 1-3	Spring Vacation			
8	L.G.		Developmental Principles	III Development Chapt. III & V
	S.G.D.			
10	Ind. St.	Sem.	Application	
15	Sem.	Ind. St.		

Date	Activity		Topic	Unit
Apr. 17	L.G.		Film (LSD)	IV Motivation Transfer Perception Retention
22	Ind. St.	Sem.	Application	
24	Sem.	Ind. St.		
29	L.G. / S.G.D.		Film (Perception)	Chapt. VIII & IX
May 1	L.G. / S.G.D.		Behavioral Objectives	V Learning
6	L.G.		Guiding Learning T. V. Demonstration	
8	L.G. / S.G.D.		Cognition	
13	L.G. / S.G.D.		Affective Learning	Chapt. VI, VII, X, XI, XII, & XIII
15	Ind. St.	Sem.	Application of Above Topics	
20	Sem.	Ind. St.		
22	POST-TEST			
27	Final Examination, 10:30 a.m. to 12:30 p.m.			

KEY

L. G. - Large group instruction - all sections meet in NCB103

S.G.D. - Small group discussion - each section will meet in originally assigned classroom*

Ind. St. - Independent Study - student is released from class to work on individual instruction assignments from packet of materials

Sem. - Seminar - students will be divided into groups of approximately 10 students per group for problem solving discussion, instructor will take a passive role

* Instructor will take an active role in the discussion

Education 211 SEMINAR SCHEDULE

	Instructor Roon	MARTIN NCB103	MOSELEY OM161	SAKAS OM159	FREEDLE OM158	IND. STUDY *
DATE		GROUP	GROUP	GROUP	GROUP	GROUPS
February 27		1	2	3	4	5, 6, 7, 8
March 4		5	6	7	8	1, 2, 3, 4
18		2	3	4	5	1, 6, 7, 8
20		6	7	8	1	2, 3, 4, 5
April 10		3	4	5	6	1, 2, 7, 8
15		7	8	1	2	3, 4, 5, 6
22		4	5	6	7	1, 2, 3, 8
24		8	1	2	3	4, 5, 6, 7
May 15		1	5	6	2	3, 4, 7, 8
20		4	8	7	3	1, 2, 5, 6

Students will go to the areas designated for each group for seminars

* Students assigned to Independent Study are released from class to work in Independent study packets

Caution: Attendance will be checked at all seminars. It is the student's responsibility to find his appropriate group on the dates assigned for seminars.

Excused Absences: If a student must miss any session of the course, the student should write the reason for the absence and turn this in to the instructor originally assigned at the beginning of the semester. All questions should be addressed to this instructor.

INDEPENDENT STUDY CHECK LIST NAME_____

Title	Scale 1	2	3	4	
1. Programmed Instruction					
2. Statistical Concepts					
3. Variables					
4. Operating Concepts of Science					
5. Sigmund Freud					
6. Modern Psychological Theory					
7. Principles of Development					
8. Sociometric Techniques					
9. Developmental Tasks					
10. Learning					
11. Synthesis					
12. Motivational Theory					

2 +(a)_____ = (b)_____Points

(a) Sum of scale values for 12 packets

(b) Points to be assigned for independent study, total possible - 50.

TEAM TEACHING QUESTIONNAIRE

1. Do you think the Team Teaching Plan has helped you to improve as a student?

   Yes 23 (35%) No 42 (65%)

2. Do you think you benefit from having different teachers in the same subject.

   Yes 38 (59%) No 26 (41%)

3. Do you think your teachers like the Team Teaching Plan?

   Yes 58 (89%) No 7 (11%)

4. Do you feel that you have spent your independent study time wisely?

   Yes 17 (26%) No 49 (74%)

5. Have you used the Library more under this system?

   Yes 13 (20%) No 52 (80%)

6. Circle the number about how large group instruction was of help to you.

5 (High)	4 (Good)	3 (Medium)	2 (Poor)	1 (Little)
1(1%)	19(29%)	29(45%)	11(17%)	5(8%)

7. Circle the number about how small group discussion was of help to you.

5 (High)	4 (Good)	3 (Medium)	2 (Poor)	1 (Little)
7(11%)	22(33%)	23(35%)	12(18%)	2(3%)

8. Circle the number about how seminars were of help to you.

5 (High)	4 (Good)	3 (Medium)	2 (Poor)	1 (Little)
9(14%)	15(24%)	17(27%)	13(21%)	9(14%)

9. Circle the number about how independent study was of help to you.

5 (High)	4 (Good)	3 (Medium)	2 (Poor)	1 (Little)
3(5%)	10(17%)	28(49%)	6(10%)	11(19%)

10. Which of the following do you feel is best provided in large group instruction?

    A. Enrichment experience - 10(14%)
    B. Fundamental ideas - 29(41%)
    C. Discussion - 2(3%)
    D. Basic Concepts - 30(42%)

11. Which of the following do you feel is best provided in small group instruction?

    A. Enrichment experience - 13(20%)
    B. Fundamental ideas - 10(15%)
    C. Discussion - 33(51%)
    D. Basic Concepts - 9(14%)

12. Which of the following do you feel is best provided in seminars?

A. Enrichment experience - 9 (14%)
B. Fundamental ideas - 5 (8%)
C. Discussion - 48 (74%)
D. Basic Concepts - 3 (4%)

13. Which of the following do you feel is best provided in independent study?

A. Enrichment experience - 30 (48%)
B. Fundamental ideas - 13 (21%)
C. Discussion - 1 (2%)
D. Basic concepts - 18 (29%)

14. What do you feel is the minimum time needed for large group instruction?

Blocks of time.	15 min.	20 min.	30 min.	45 min.	1 hr.	[illegible]
[illegible]	9(14%)	10(16%)	27(42%)	8(28%)	0	

15. What do you feel is the maximum time needed for large group instruction?

15 min.	25 min.	30 min.	45 min.	1 hr.
3(6%)	1(1%)	13(20%)	23(35%)	25(38%)

16. Do you feel that you can take advantage of independent study time?

Yes 56(85%) No 10(15%)

17. Do you think that the Team Teaching Plan helped you to develop a sense of responsibility?

Yes 34(52%) No 31(48%)

19. Do you feel there are enough advantages under the Team Teaching plan to warrant continuance? Yes 16(24%) No 23(35%) Not qualified to answer 26(41%).

20. Compared to a regular school program, do you like the Team Teaching Plan?

Better 22(37%) Same 13(20%) Less 30(43%)

21. Do you think the Team Teaching Plan will help you to grow professionally as compared to a traditionalal program?

Yes 31(49%) No 26(41%) Do Not Know 7(10%)

22. If given the choice, would you select a team teaching class over a traditionally taught class?

Yes 28(44%) No 36(56%)

23. If you have comments please make them below.